tating about investing, and we are being asked nearly every week for our experience with these machines. A few minor improvements may be made in them, but they seem to be about the last word for city milk or cream trade. or for the manufacture of finest creamery butter. It is likely that when they come into more general use the price will be lowered, but to those who wish to improve the quality of their butter at the least cost for labor, heating and cooling, these latest type of pasteurizers look good.

However, to get the best results from any system of pasteurization the cream should be delivered in a sweet condition, or nearly so, otherwise the tendency is far too great a loss of fat in the buttermilk, caused by coagulation of the curdy matters enclosing fat globules which are impossible to recover in the process of churning. We hope those creamery firms who are advertising for cream, "sweet or sour," will allow us to say that they cannot expect the best results by pasteurizing sour cream—in fact we understand that no attempt is made to pasteurize where cream is received "sweet or sour." We should be inclined to go farther and say that it is doubtful if the best interests of the creamery industry are fostered by advertising the payment of highest prices for cream "sweet or sour," as it gives the farmer, and the public generally, the impression that "sour" cream is just as good, and worth as much money for buttermaking as is "sweet" cream, whereas all who have studied the question know this is not the case. "But," I fancy some one says, "does not the buttermaker sour the cream before he churns it?" "Yes, he does, but the souring or ripening is under the control of the buttermaker. In the one case it is like an engine on a railway track running without a driver; or a horse tearing down a road or street with no one in charge—both may end all right, but the probabilities are considerable damage will be done before engine or horse is under control. So it is with cream soured on farms and during transit to the creamery—it may result in good butter, but more probably the quality will be injured, and it will also injure the reputation of our butter. The writer has been credibly informed that British Columbia dealers will not touch Western Ontario butter at all because of the previous experiences, and he has been told that during the past winter certain creameries have been unable to sell their butter at any price, even though "peddling" it about the streets. We hope the foregoing is not true.

Another point, is the need of reducing the loss of fat in the buttermilk to the lowest point possible. Sometimes there is an excessive amount of fat wasted in the buttermilk, caused by pasteurizing sour cream; mixing lots of cream from two or more vats in one churning; churning at too high a temperature, etc. Quite a number of creameries are putting in large churns and then are mixing the cream from two vats, each of which would make a smaller churning, in the one churning. It is almost impossible to have those two lots of the same temperature, and degrees of ripening, hence when mixed and churned, one vat is likely to churn more quickly than the other with consequent loss. For each ton of butter there will be about three tons of buttermilk. An excess of .2 per cent. fat in the buttermilk means an excess loss of twelve pounds of butter, and where a creamery is churning an average of a ton of butter a day, this means 72 pounds loss in a week, and nearly a ton in a season, which at twenty-five cents a pound is a loss of $500. This is a point requiring careful consideration by all buttermakers in our creameries. Reduce the waste of fat in buttermilk.

A third point requiring attention is salt and moisture, which two may be considered together. Lighter salting, more uniform salting. and the moisture content of the butter well within the legal limit of 16 per cent., should receive the attention of our buttermakers. The markets are demanding lighter-salted butter and uniformity. To prevent waste of salt and to meet the demand for uniform salting, a salt test should be used by all buttermakers, in addition to a moisture test. Those not familiar with these tests should make their acquaintance before the season of 1914 opens.

The last need, which we have but short space to deal with, is a good cold-storage for storing the butter as soon as it is made. If not sold within a week, the butter should be shipped to a mechancial or other storage where the temperature is below freezing point, 32 degrees F.—a temperature of 12 degrees F. would be better In tests made at the O. A. C, best results were got in keeping quality, by placing the butter as soon as possible after making at a low temperature, rather than leaving it at a moderate temperature for a few days, then putting in a cold place, as is advised by some.

In addition to being cold, a storage for butter should be dry and free from mould, as mould is very objectionable on butter and causes heavy losses.

O. A. C. H. H. DEAN.

Milk and Beef.

The great amount of talk re the marked increase in price and demand for good beef incident, upon the removal of the United States tariff has not boomed the breeding of beef cattle in this country to the detriment of the dairy breeds. Dairy cattle were never in keener demand than at the present time, but out of all that has been written and said on the subject, there seems to have come a keener demand for and a higher appreciation of the dual-purpose cow. True, difference of opinion on this type of cow still exists and always will, but the fact remains that the cow capable of yielding a fair amount of milk during the year and at the same time producing a calf which judiciously managed and fed also returns a profit when turned over to the butcher, is being sought after by men who, a few years ago, scoffed at the idea. There are dozens of buyers for each milking Shorthorn in the country, and sales of this type of cattle are being attended as never before, and bids are coming faster on the milking type of cow than on the straight beef animal. A large proportion of the farming public seems to believe that there are possibilities almost unlimited in the breeding of milk-producing cattle. The milking Shorthorn is now a recognized fact, and we believe, in the Old Land, steps have been taken to improve the milking qualities of other beef cattle. Milk and beef, two staples in our diet, are the measure by which cattle must ultimately be sized up.

THE APIARY.

Queen Rearing.

Editor "The Farmer's Advocate":

Every up-to-date beekeeper should know how to raise good queens. The majority of beekeepers find it cheaper to buy the most of their queens, yet there are some that have the natural ability and love for the business, which would enable them to raise their own, if they only knew how. A beekeeper who is contemplating queen raising should secure a good breeding queen from a reliable breeder, then adopt any of the well-known methods, described fully in any good book.

An Old Country Apiary.
Bees are congenial company in the hot summer days.

One of the most simple methods of raising good queens is known as the Doolittle artificial cell-cup method. Take a piece of hard wood and whittle and sandpaper the point so that it will be the size and shape of a natural queen cell. Then take a small dish of melted beeswax and a cup of cold water. First, dip the stick into the water, then dip it into the wax about one-half inch. When cool dip it into the wax again seven or eight times, or until the cell has a good thick base.each time dipping it less depth. When cool it is removed from the stick, and the same process is gone through till the required number is made. The next step is to attach them to a cell bar, twelve to fifteen cells are sufficient on one bar, after which they should be given to a strong colony to be polished up before grafting.

The apiarist should now look through some of his strongest colonies in order to get a natural queen-cell from which to get some royal jelly. Having found a queen-cell containing royal jelly, the next step is to take a toothpick and transfer a portion of the jelly to each one of the artifical cups. An amount equal in size to a B.B. shot will do. Then find in your breeding hive a comb containing young larvæ not more than twenty-four hours old. Cut out a piece of the comb and shave down the cells almost to the base so that the young larvæ can more easily be reached. With the toothpick transfer one of these young worker larvæ into each of the cups containing the royal jelly. The cell bar should then be fastened securely in an ordinary frame, and placed in the center of a strong colony that is superseding their queen; or placed in the top story of a strong colony having brood over an excluder. In ten days' time these cells should be distributed to nuclei made ready to secure them, or they can be used to advantage in requeening old or failing queens. As a rule, the young queens will be found laying about eleven days from the time they hatch.

The best time to raise good queens is during a honey flow. At any time when honey is not coming in from the fields bees will not accept queen-cells by the ordinary method, and have to be fed. At such times the average apiarist will find it to his advantage to use only strong colonies made queenless and broodless; they should also be fed about a quart of diluted honey and water each evening. An ordinary five-pound honey pail with a few awl holes in the corner makes a very good feeder for this purpose. It should be placed directly over the cluster. If the nights are cool sufficient packing should be used to prevent the escape of heat from the cluster. A beekeeper who has a limited amount of time to attend to his bees had better raise his queens during the honey flow, or buy them. There are so many little details to keep track of, and strong colonies will not accept cells so readily, or they may supersede these young queens, thereby making the colony of very little value the following season.

Prescott Co., Ont. JOHN A. McKINNON.

Wintering Bees.

Editor "The Farmer's Advocate":

In your paper of March 5th, W. H. S. asked for information regarding construction of chaff-packed hives. As you say, most beekeepers pack single-wall hives four in a clamp, but have to unpack again in spring. I am now using a hive along the line asked for, only I do not think two inches enough packing so I use four and six or eight inches on top. I make it of ¾-inch lumber, and find it strong enough to stand all the strains liable to any ordinary hive. I must take exception to the last part of your last statement regarding such a hive being too warm in summer. There are at least four reasons I can give. First, we have fewer swarms, the chaff hive being cooler in summer and keeping a more uniform temperature that is, it is warmer at night and cooler in the heat of the day. Taking the two hives side by side in actual test it has been found that the difference between the two extremes of temperature in a single wall hive was 20 degrees greater than that in a chaff hive. Second, we have larger colonies, which means more honey. Third, we have faster work by the bees, as the hive is warmer at night, allowing the bees to ripen and store faster. Fourth, then there is less labor and muss in spring and fall, one having only to place a chaff tray upon the hive and replace the cover over all. Such a hive as I make is, I admit, not as easy to handle by one man as it is rather larger but it is not much heavier, as it is only ¾-inch lumber.

An explanation of the fact that such a hive is cooler is the same as that which leads us to pack ice in sawdust, viz., the loose, porous material is a non-conductor of heat and cold.

Brant Co., Ont. C. E. S.

POULTRY.

Hatching Poultry on the Farm.

Editor "The Farmer's Advocate":

The hatching season is once more looming up before the minds of poultrymen. Some in fact have begun operations, but in this part of Canada (Carleton and the other eastern counties) the latter part of April and May are the favorite hatching seasons. Anything earlier than this is found to be very unsatisfactory; eggs expensive, hatches poor, owing to weak germ due to too little exercise on the part of the hens, and conditions generally, unsatisfactory.

Eggs coming from a distance sometimes prove very unsatisfactory at any season, but especially so during the early months, as the germs which are likely to be weak at the best are weakened still more by careless treatment and exposure en route to their destination. Later on they are much stronger and will, therefore, give better satisfaction. Those who get eggs from a distance, however, may increase the hatchability of their eggs by resting them for at least twelve hours in a cool, dry, well-ventilated room, having the temperature ranging around 50 degrees. The germ is a very delicate organization, and if started directly on its incubating